

Applied Electronics Bootcamp: The Enhancement of Electrical Engineering Curriculum Through Student-Directed Learning Programs

Do students learn more effectively in peer-led learning programs?

Introduction

- At Florida Atlantic University, Electrical Engineering is a severely underrepresented academic field and the amount of Electrical Engineering students have steadily decreased since 2009 according to the FAU Undergraduate Statistics Report.
- In order to bring more accessibility to FAU students from the Electrical Engineering program, Applied Electronics Bootcamp is FAU's first student-led learning initiative that aims to enhance the Electrical Engineering curriculum with an emphasis on Project-led education (PLE) that promotes active learning processes (Lima, Carvalho , Flores, Hattum-Janssen, (2007)).
- Applied Electronics Bootcamp aims to raise student's educational awareness of the Electrical Engineering field and the importance of a creative problem-solving mindset (Alan Marvell, David Simm, Rebecca Schaaf & Richard Harper (2013)).

Method

- In order to assess the level of student interaction and educational enhancement, attendance data was collected twice a week for both the lecture and workshop components of this 9-week program.
- Five anonymous polls of program participants were also used as tools to determine the majors of the attendees, their level of interest in certain lectures or workshops and how they were able to incorporate their knowledge from the program into their coursework at FAU.

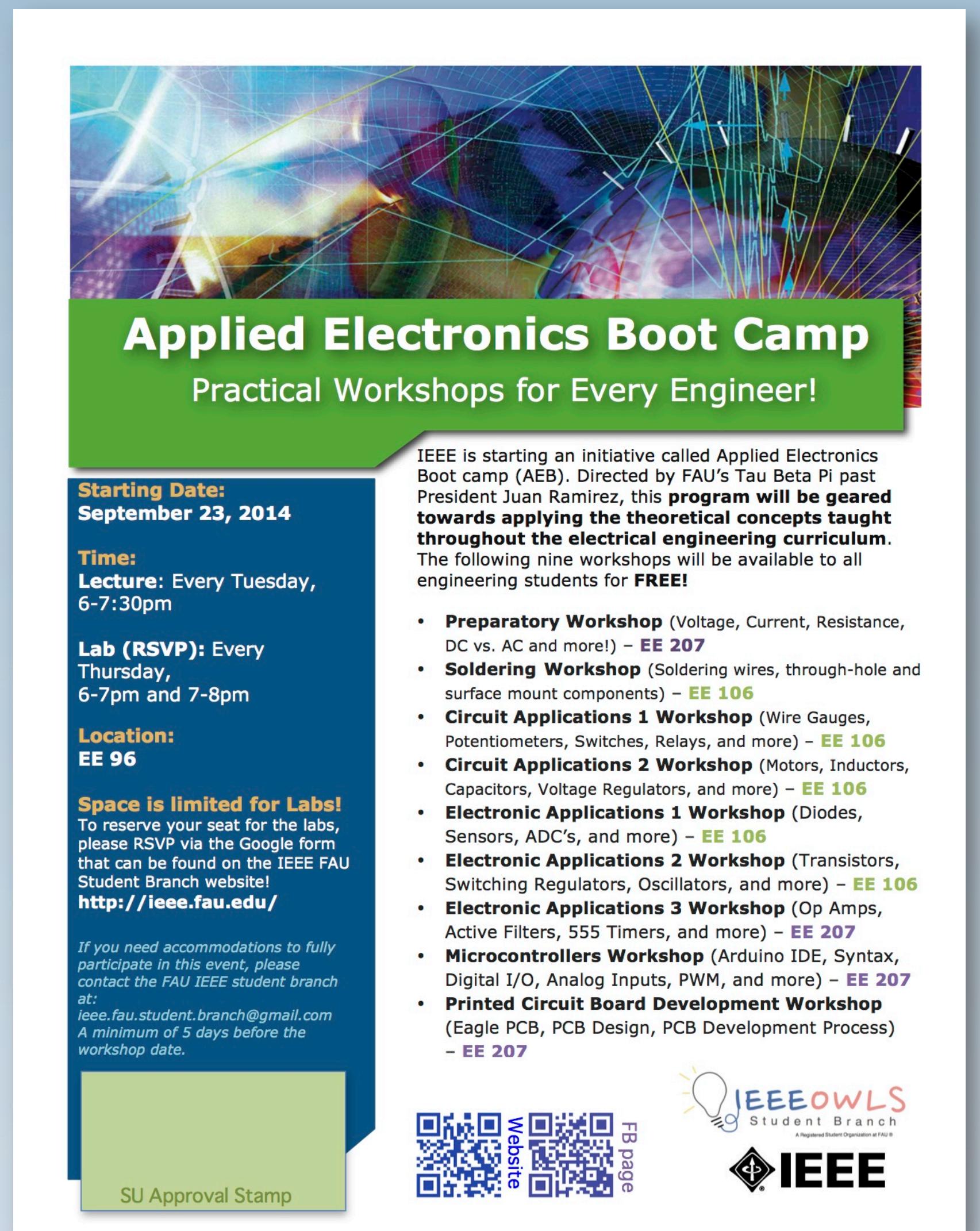


Fig 1: Flyer with bootcamp schedule.



Figure 4: Picture of students soldering circuits during the soldering workshop.

Results

- After observing the participants that remained consistently active in the program until the end of the semester, it was concluded that:
 - AEB enhanced the education of the engineering students by providing a review of the fundamental basic theories covered in courses such as Circuits I.
 - The program exposed groups of non-engineering students to a tangible approach of what Electrical Engineering is.
 - AEB saw a 56% increase in attendance in comparison to when it first began operating in the Spring of 2014, and has also seen students from a variety of majors at FAU take interest in the lectures and workshops.

Discussion

- In order to bring more accessibility to FAU students from the Electrical Engineering program, Applied Electronics Bootcamp is FAU's first student-led learning initiative that aims to enhance the Electrical Engineering curriculum while simultaneously promoting the student's educational awareness of the Electrical Engineering field.
- The non-engineering students were intrigued after exploring different topics of lecture such as "Electronics Application I-III" and "Techniques of Soldering" which were followed with soldering workshops or a session where the students could construct small-scale light simulations.

References

- Rui M. Lima , Dinis Carvalho , Maria Assunção Flores & Natascha Van Hattum-Janssen (2007) *A case study on project led education in engineering: students' and teachers' perceptions*, European Journal of Engineering Education, 32:3, 337-347, DOI: 10.1080/03043790701278599
- Alan Marvell, David Simm, Rebecca Schaaf & Richard Harper (2013) *Students as scholars: evaluating student-led learning and teaching during fieldwork*, Journal of Geography in Higher Education, 37:4, 547-566, DOI: 10.1080/03098265.2013.811638